



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XA967]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys, Virginia and North Carolina

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; proposed incidental harassment authorization; request for comments on proposed authorization and possible renewal.

SUMMARY: NMFS has received a request from Kitty Hawk Wind for authorization to take marine mammals incidental to marine site characterization surveys offshore of North Carolina. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS is also requesting comments on a possible one-time, one-year renewal that could be issued under certain circumstances and if all requirements are met, as described in **Request for Public Comments** at the end of this notice. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Written comments should be submitted via email to ITP.Daly@noaa.gov.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period.

Comments, including all attachments, must not exceed a 25-megabyte file size. All comments received are a part of the public record and will generally be posted online at www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act without change. All personal identifying information (*e.g.*, name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Jaclyn Daly, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable

adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has preliminarily determined that the issuance of the proposed IHA qualifies to be categorically excluded from further NEPA review.

We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On February 2, 2021, NMFS received a request from Kitty Hawk Wind, a subsidiary of Avangrid Renewables (Avangrid) for an IHA to take marine mammals incidental to conducting marine site characterization surveys off of the Atlantic Coast.

Kitty Hawk Wind's overall lease area (OCS-A 0508) is located approximately 44 kilometers (km) offshore of Corolla, North Carolina, in Federal waters. The proposed survey activities will occur within the lease area and along potential submarine cable routes to landfall locations in Virginia. The application was deemed adequate and complete on April 27, 2021. Kitty Hawk Wind's request is for take of a small number of nine species of marine mammals, by Level B harassment only. Neither Kitty Hawk Wind nor NMFS expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued an IHA to Avangrid for similar work in the same geographic area on June 3, 2019 (84 FR 31032) with effective dates from June 1, 2019 through May 31, 2020. Avangrid complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHA and information regarding their monitoring results may be found in the **Estimated Take** section. Avangrid's final marine mammal monitoring report, dated January 7, 2021, submitted pursuant to that IHA can be found at <https://www.fisheries.noaa.gov/action/incidental-take-authorization-avangrid-renewables-llc-marine-site-characterization-surveys>.

Description of Proposed Activity

Overview

Kitty Hawk Wind is requesting an IHA authorizing the take, by Level B harassment only, of nine species of marine mammals incidental to marine site characterization surveys, specifically in association with the use of high-resolution geophysical (HRG) survey equipment off North Carolina. We note surveys will also occur off Virginia; however, for reasons described below, take of marine mammals incidental to use of those surveys is not expected to occur. The surveys will support offshore wind development in 40 percent of the lease area (OCS-A 0508) in the northwest corner closest to the North Carolina shoreline (approximately 198 square kilometers (km²)). Kitty Hawk Wind would use five types of

survey equipment; however, as described below, only the Fugro SRP EAH 2D sparker has the potential to harass marine mammals. Exposure to noise from the surveys may cause behavioral changes in marine mammals (*e.g.*, avoidance, increased swim speeds, etc.) rising to the level of take (Level B harassment) as defined under the MMPA.

Dates and Duration

Kitty Hawk Wind would commence the survey as soon as possible, with the objective of completing the work by September 2021. The surveys would cover approximately 3,300 km of survey trackline over 25 days, not including non-survey days likely needed for weather down time. The IHA would be effective for one year from the date of issuance. This schedule is based on 24-hour operations.

Specific Geographic Region

Kitty Hawk Wind's overall lease area is approximately 495 km² and is located approximately 44 km offshore of Corolla, North Carolina, in Federal waters. The proposed survey activities will occur within the lease area and along potential submarine cable routes to landfall locations in Virginia (Figure 1). Specifically, Kitty Hawk will conduct the 2021 HRG survey campaign in the wind development area (WDA defined as the northwestern 40 percent of the Lease Area) and offshore export cable corridor. The HRG surveys would occur in the WDA and an approximately 62 km long by 2 km wide export cable corridor. Water depths across the WDA range from approximately 27 to 38.5 meters (m). The offshore export cable corridor will extend from shallow water areas (0 m) near landfall to approximately 33 m depth.

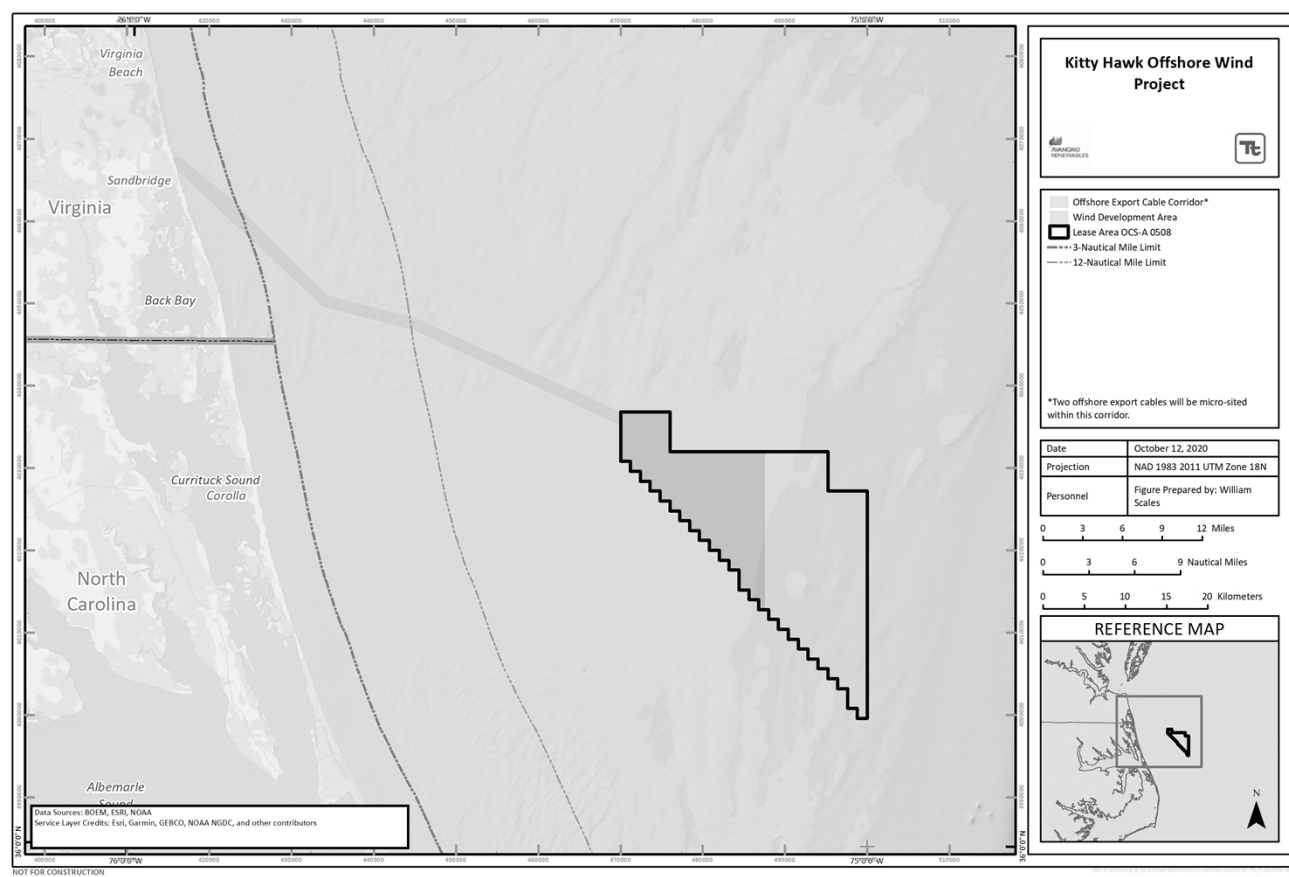


Figure 1: Project Area for the marine site characterization surveys which include the WDA and the potential submarine cable route area

Detailed Description of Specific Activity

The purpose of Kitty Hawk Wind's marine site characterization surveys is to support the siting of the proposed wind turbine generators and offshore export cables, providing a more detailed understanding of the seabed and sub-surface conditions in the WDA and export cable corridor.

Kitty Hawk Wind anticipates that during most of the survey only two vessels would be necessary, with one vessel operating nearshore and another operating offshore. However, up to 3 vessels may operate at any given time with final vessel choices dependent on the final survey design, vessel availability, and survey contractor selection. Concurrently operating vessels would remain at least 1 km apart. The vessels will be capable of maintaining course and a survey speed of approximately 3 knots (5.6 km per hour (hr)) while transiting survey lines. Surveys will be conducted along track lines spaced 300 m apart, with tie lines perpendicular to the main transect lines also spaced 300 m apart.

Acoustic sources planned for use during HRG survey activities proposed by Kitty Hawk Wind include the following:

- Medium penetration, impulsive sources (*i.e.*, boomers and sparkers) are used to map deeper subsurface stratigraphy. A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. Sparkers create omnidirectional acoustic pulses from 50 Hz to 4 kHz. These sources are typically towed behind the vessel.

Operation of the following survey equipment types is not expected to present reasonable risk of marine mammal take, and will not be discussed further beyond the brief summaries provided below.

- Non-impulsive, parametric SBPs are used for providing high data density in sub-bottom profiles that are typically required for cable routes, very shallow water, and archaeological surveys. These sources generate short, very narrow-beam (1° to 3.5°) signals at high frequencies (generally around 85-100 kHz). The narrow beamwidth significantly reduces

the potential that a marine mammal could be exposed to the signal, while the high frequency of operation means that the signal is rapidly attenuated in seawater. These sources are typically deployed on a pole rather than towed behind the vessel.

- Ultra-short baseline (USBL) positioning systems are used to provide high accuracy ranges by measuring the time between the acoustic pulses transmitted by the vessel transceiver and a transponder (or beacon) necessary to produce the acoustic profile. It is a two-component system with a pole-mounted transceiver and one or several transponders mounted on other survey equipment. USBLs are expected to produce extremely small acoustic propagation distances in their typical operating configuration.
- Multibeam echosounders (MBESs) are used to determine water depths and general bottom topography. The proposed MBESs all have operating frequencies >180 kHz and are therefore outside the general hearing range of marine mammals.
- Side scan sonars (SSS) are used for seabed sediment classification purposes and to identify natural and man-made acoustic targets on the seafloor. The proposed SSSs all have operating frequencies >180 kHz and are therefore outside the general hearing range of marine mammals.

Table 1 identifies representative survey equipment with the expected potential to result in exposure of marine mammals and potentially result in take. The make and model of the listed geophysical equipment may vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection.

All decibel (dB) levels included in this notice are referenced to 1 micropascal. The root mean square decibel level (dB_{rms}) represents the square root of the average of the pressure of the sound signal over a given duration. The peak dB level (dB_{peak}) represents the range in pressure between zero and the greatest pressure of the signal. Operating frequencies are presented in kilohertz (kHz).

Table 1. Summary of Representative HRG Equipment.

HRG System	Representative HRG Survey Equipment	Operating Frequencies kilohertz (kHz)	Source Level dB _{peak}	Source Level dB _{rms}	Pulse Duration (ms)	Beam Width (degree)
Subsea Positioning/ ultra-short baseline positioning system (USBL) a/	Sonardyne Ranger 2 USBL	35-50	200	188	16	180
Sidescan Sonar a/, b/	Klein 3900 Side Scan Sonar	445 / 900	226	220	0.016 to 0.100	1 to 2
Parametric Shallow penetration sub-bottom profiler a/	Innomar parametric SES-2000 Standard	85 to 115	247	241 c/	0.07 to 2	1
Multibeam Echo Sounder a/, b/	Reson T20-P	200/300/400	227	221	2 to 6	1.8 ±0.2
Multi-level Stacked Sparker	Fugro SPR EAH 2D Sparker (700 J)	0.4 to 3.5	223 d/	213d/	0.5 to 3 d/	180
<p>a/ Potential harassment from operation of this device is not anticipated.</p> <p>b/ Operating frequencies are above all relevant marine mammal hearing thresholds.</p> <p>c/ The equipment specification sheets indicate a peak source level of 247 dB re 1 µPA m. The average difference between the peak and SPLRMS source levels for sub-bottom profilers measured by Crocker and Fratantonio (2016) was 6 dB. Therefore, the estimated SPLRMS sound level is 241 dB re 1 µPA m.</p> <p>d/ Sound levels were not available from the manufacturer. Therefore, the source levels and pulse duration are based on data from Crocker and Fratantonio (2016) using the Applied Acoustics Dura-Spark as a comparable proxy. The source levels are based on an energy level of 1,000 J with 240 tips and a bandwidth of 3.2 kHz.</p>						

Proposed mitigation, monitoring, and reporting measures are described in detail later in this document (please see **Proposed Mitigation** and **Proposed Monitoring and Reporting**).

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about

these species (e.g., physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 2 lists all species or stocks that may occur within the survey area and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Atlantic and Gulf of Mexico SARs (*e.g.*, Hayes *et al.*, 2019, 2020). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2019 SARs and draft 2020 SARs (available online at:

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports>).

Table 2. Summary Information of Species within the Proposed Survey Area.

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Balaenidae						

North Atlantic right whale	<i>Eubalaena glacialis</i>	Western North Atlantic	E/D; Y	368 (-; 356; 2020) ⁴	0.8	18.6
Family Balaenopteridae (rorquals)						
Humpback whale	<i>Megaptera novaeangliae</i>	Gulf of Maine	-/ -; Y	1,393 (0; 1,375; 2016)	22	58
Fin whale	<i>Balaenoptera physalus</i>	Western North Atlantic	E/D; Y	6,802 (0.24; 5,573; 2016)	11	2.35
Sei whale	<i>Balaenoptera borealis</i>	Nova Scotia	E/D; Y	6,292 (1.02; 3,098; 2016)	6.2	1.2
Minke whale	<i>Balaenoptera acutorostrata</i>	Canadian East Coast	-/-; N	21,968 (0.31; 17,002; 2016)	170	10.6
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	<i>Physeter macrocephalus</i>	NA	E; Y	4,349 (0.28;3,451; See SAR)	3.9	0
Family Delphinidae						
Long-finned pilot whale	<i>Globicephala melas</i>	Western North Atlantic	-/-; N	39,215 (0.30; 30,627; See SAR)	306	21
Short finned pilot whale	<i>Globicephala macrorhynchus</i>	Western North Atlantic	-/-;Y	28,924 (0.24; 23,637; 2016)	236	160
Bottlenose dolphin	<i>Tursiops truncatus</i>	Western North Atlantic Offshore	-/-; N	62,851 (0.23; 51,914, 2016)	519	28
		W.N.A. Northern Migratory Coastal	-/-;Y	6,639 (0.41, 4,759, 2016)	48	12.2-21.5
Common dolphin	<i>Delphinus delphis</i>	Western North Atlantic	-/-; N	172,947 (0.21; 145,216; 2016)	1,452	399
Atlantic spotted dolphin	<i>Stenella frontalis</i>	Western North Atlantic	-/-; N	39,921 (0.27; 32,032; 2012)	320	0
Risso’s dolphin	<i>Grampus griseus</i>	Western North Atlantic	-/-; N	35,493 (0.19; 30,289; 2016)	303	54.3
Family Phocoenidae (porpoises)						

Harbor porpoise	<i>Phocoena phocoena</i>	Gulf of Maine/Bay of Fundy	-/-; N	95,543 (0.31; 74,034; 2016)	851	217
Order Carnivora – Superfamily Pinnipedia						
Family Phocidae (earless seals)						
Harbor seal	<i>Phoca vitulina</i>	Western North Atlantic	-/-; N	75,834 (0.15; 66,884, 2018)	2,006	350
<p>¹ ESA status: Endangered (E), Threatened (T) / MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.</p> <p>² NMFS marine mammal stock assessment reports online at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable.</p> <p>³ These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.</p> <p>⁴ Pace <i>et al</i> 2021.</p>						

All species that could potentially occur in the proposed survey areas are included in Table

2. While North Atlantic right whales, sei and sperm whales, and harbor seals have been sighted within the survey area, the temporal occurrence of the surveys (summer/early fall) does not overlap with the time of year these species may be present in the survey area as most of these species are in northern latitudes during this time. For these reasons, along with the very short duration of the survey, we consider the potential for take of these species *de minimus* and they will not be discussed further.

Humpback Whale

Humpback whales are found worldwide in all oceans. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and humpbacks continued to be listed as endangered. NMFS recently evaluated the status of the species, and on September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259; September 8, 2016).

The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whale that is expected to occur in the survey area.

Humpback whales have a global distribution and follow a migratory pattern of feeding in the high latitudes during summers and spending winters in the lower latitudes for calving and mating. The Gulf of Maine stock follows this pattern with winters spent in the Caribbean and West Indies, although acoustic recordings show a small number of males persisting in Stellwagen Bank throughout the year (Vu *et al.*, 2012). Barco *et al.* (2002) suggested that the mid-Atlantic region primarily represents a supplemental winter feeding ground used by humpbacks. However, with populations recovering, additional surveys that include photo identification and genetic sampling need to be conducted to determine which stocks are currently using the mid-Atlantic region.

Sightings of humpback whales in the Mid-Atlantic are common (Barco *et al.*, 2002), as are strandings (Wiley *et al.*, 1995). Barco *et al.* (2002) suggested that the Mid-Atlantic region primarily represents a supplemental winter feeding ground used by humpbacks. During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys (HRG and geotechnical surveys), no humpback whales were observed (Milne, 2020).

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine to Florida. Partial or full necropsy examinations have been conducted on approximately half of the 145 known cases. Of the whales examined, about 50 percent had evidence of human interaction, either ship strike or entanglement. While a portion of the whales have shown evidence of pre-mortem vessel strike, this finding is not consistent across all whales examined and more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. Three previous UMEs involving humpback whales have occurred since 2000, in 2003, 2005, and 2006. More information is available at:

www.fisheries.noaa.gov/national/marine-life-distress/2016-2021-humpback-whale-unusual-mortality-event-along-atlantic-coast.

Fin Whale

Fin whales are common in waters of the U. S. Atlantic Exclusive Economic Zone (EEZ), principally from Cape Hatteras northward (Hayes *et al.*, 2020). Fin whales are present north of 35-degree latitude in every season and are broadly distributed throughout the western North Atlantic for most of the year, though densities vary seasonally (Hayes *et al.*, 2020). While fall is the season of lowest overall abundance of fin whales off Virginia and North Carolina, they do not depart the area entirely. Fin whales, much like humpback whales, seem to exhibit habitat fidelity (Hayes *et al.* 2020; NOAA Fisheries 2019). Fin whales accounted for 46 percent of the large whales sighted during aerial surveys along the continental shelf (CETAP, 1982) between Cape Hatteras and Nova Scotia from 1978 to 1982. During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, five detections of 17 fin whales were recorded with a mean group size of 3.4 (Milne, 2020). However, these observations occurred during transit well north of the project area offshore Delaware and New Jersey (Milne, 2020; Figure 7). No fin whales were observed in the WDA or cable corridor. The main threats to fin whales are fishery interactions and vessel collisions (Hayes *et al.*, 2020).

Minke Whale

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45° W) to the Gulf of Mexico (Hayes *et al.*, 2020). This species generally occupies waters less than 100 m deep on the continental shelf. Little is known about minke whales' specific movements through the mid-Atlantic region; however, there appears to be a strong seasonal component to minke whale distribution, with acoustic detections indicating that they migrate south in mid-October to early November, and return from wintering grounds starting in March through early April (Hayes *et al.*, 2020). Northward migration appears to track the warmer waters of the Gulf

Stream along the continental shelf, while southward migration is made farther offshore (Risch *et al.*, 2014). During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, one minke whale was detected. Similar to fin whales, this detection occurred while the vessel was in transit and located north of the project area off New Jersey.

Since January 2017, elevated minke whale mortalities have occurred along the Atlantic coast from Maine through South Carolina, with a total of 103 strandings recorded through January 2021. This event has been declared a UME. Full or partial necropsy examinations were conducted on more than 60 percent of the whales. Preliminary findings in several of the whales have shown evidence of human interactions or infectious disease, but these findings are not consistent across all of the whales examined, so more research is needed. More information is available at: www.fisheries.noaa.gov/national/marine-life-distress/2017-2021-minke-whale-unusual-mortality-event-along-atlantic-coast.

Long-finned Pilot Whale

Long-finned pilot whales are found from North Carolina and north to Iceland, Greenland and the Barents Sea (Hayes *et al.*, 2020). In U.S. Atlantic waters the species is distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring and in late spring, pilot whales move onto Georges Bank and into the Gulf of Maine and more northern waters and remain in these areas through late autumn (Hayes *et al.*, 2020). Long-finned and short-finned pilot whales overlap spatially along the mid-Atlantic shelf break between Delaware and the southern flank of Georges Bank. Long-finned pilot whales have occasionally been observed stranded as far south as South Carolina, but sightings of long-finned pilot whales south of Cape Hatteras would be considered unusual (Hayes *et al.*, 2020). During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, no pilot whales were observed (Milne, 2020). The main threats to this species include interactions with fisheries and habitat issues including exposure to high levels of polychlorinated biphenyls and chlorinated pesticides, and toxic metals including mercury, lead, cadmium, and selenium (Hayes *et al.*, 2020).

Short-finned Pilot Whale

As described above, long-finned and short-finned pilot whales overlap spatially along the mid-Atlantic shelf break between Delaware and the southern flank of Georges Bank. There is limited information on the distribution of short-finned pilot whales; they prefer warmer or tropical waters and deeper waters offshore, and in the northeastern United States, they are often sighted near the Gulf Stream (Hayes *et al.*, 2020). Short-finned pilot whales have occasionally been observed stranded as far north as Massachusetts but north of $\sim 42^{\circ}$ N short-finned pilot whale sightings would be considered unusual while south of Cape Hatteras most pilot whales would be expected to be short-finned pilot whales (Hayes *et al.*, 2020). In addition, short-finned pilot whales are documented along the continental shelf and continental slope in the northern Gulf of Mexico (Mullin and Fulling 2003), and they are also known from the wider Caribbean. During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, no pilot whales were observed (Milne, 2020). As with long-finned pilot whales, the main threats to this species include interactions with fisheries and habitat issues including exposure to high levels of polychlorinated biphenyls and chlorinated pesticides, and toxic metals including mercury, lead, cadmium, and selenium (Hayes *et al.*, 2020).

Atlantic White-sided Dolphin

White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100-m depth contour from central West Greenland to North Carolina (Hayes *et al.*, 2020). The Gulf of Maine stock is most common in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al.*, 1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia to South Carolina. The Virginia and North Carolina observations appear to represent the southern extent of the species range. From June

through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year round but at low densities. During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, one detection of white-sided dolphins comprised of six individuals were observed during geotechnical surveys; no detections occurred during HRG operations (Milne, 2020).

Atlantic Spotted Dolphin

Atlantic spotted dolphins are found in tropical and warm temperate waters ranging from southern New England, south to Gulf of Mexico and the Caribbean to Venezuela (Hayes *et al.*, 2020). This stock regularly occurs in continental shelf waters south of Cape Hatteras and in continental shelf edge and continental slope waters north of this region (Hayes *et al.*, 2020). Atlantic spotted dolphins regularly occur in the inshore waters south of Chesapeake Bay, and near the continental shelf edge and continental slope waters north of this region (Payne *et al.*, 1984; Mullin and Fulling, 2003). Atlantic spotted dolphins north of Cape Hatteras also associate with the north wall of the Gulf Stream and warm-core rings (Hayes *et al.*, 2020). There are 2 forms of this species, with the larger ecotype inhabiting the continental shelf and is usually found inside or near the 200 m isobaths (Hayes *et al.*, 2020).

During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, 78 detections comprising 1,237 Atlantic spotted dolphins were recorded during HRG operations between 2012 and 2014 during the summer MABS surveys (Milne, 2020). An additional 14 detections comprising 203 individuals were reported during geotechnical work with a mean group size of 14.5 (Milne, 2020).

Common Dolphin

The common dolphin is found world-wide in temperate to subtropical seas. In the North Atlantic, common dolphins are commonly found over the continental shelf between the 100-m

and 2,000-m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (Hayes *et al.*, 2020). They are present in the western Atlantic from Newfoundland to Florida. The common dolphin is especially common along shelf edges and in areas with sharp bottom relief such as seamounts and escarpments (Reeves *et al.* 2002). They show a strong affinity for areas with warm, saline surface waters. Common dolphins belonging to the Western North Atlantic stock are distributed in waters off the eastern U.S. coast from Cape Hatteras northeast to Georges Bank (35° to 42° N) during mid-January to May and move as far north as the Scotian Shelf from mid-summer to autumn (CETAP, 1982; Hayes *et al.*, 2020; Hamazaki, 2002; Selzer and Payne, 1988).

During the 2019 and 2020 marine site characterization surveys, five detections of common dolphins comprising 82 individuals and mean group size of 16.4 were recorded (Milne, 2020). An additional 6 detections occurred during HRG survey work. Those detections comprised 25 individuals with a mean group size of 4 (Milne, 2020).

Bottlenose Dolphin

There are two distinct bottlenose dolphin morphotypes in the western North Atlantic: the coastal and offshore forms (Hayes *et al.*, 2020). The offshore form is distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic Ocean from Georges Bank to the Florida Keys. The coastal morphotype is morphologically and genetically distinct from the larger, more robust morphotype that occupies habitats further offshore. North of Cape Hatteras, there is separation of the offshore and coastal morphotypes across bathymetric contours during summer months. Aerial surveys flown from 1979 through 1981 indicated a concentration of common bottlenose dolphins in waters <25 m deep that corresponded with the coastal morphotype, and an area of high abundance along the shelf break that corresponded with the offshore stock (Hayes *et al.*, 2020). Torres *et al.* (2003) found a statistically significant break in the distribution of the morphotypes; almost all dolphins found in waters >34m depth and >34 km from shore were of the offshore morphotype. The coastal stock is best defined by its summer

distribution, when it occupies coastal waters from the shoreline to the 20-m isobath between Virginia and New York (Hayes *et al.*, 2020). This stock migrates south during late summer and fall, and during colder months it occupies waters off Virginia and North Carolina (Hayes *et al.*, 2020). Therefore, during the summer, dolphins found inside the 20-m isobath in the Project Area are likely to belong to the coastal stock, while those found in deeper waters or observed during cooler months belong to the offshore stock. HRG surveys using the sparker would occur in water depths greater than 20 m in the WDA; therefore, the offshore stock is likely to be the only stock observed during the surveys.

During the 2019 and 2020 surveys, 56 detections of bottlenose dolphins comprising 780 individuals were recorded during HRG surveys (Milne, 2020). Mean group size was 14. During geotechnical work, four detections comprising 25 individuals and a mean group size of 6.25 were reported (Milne, 2020). These detections occurred both offshore and nearshore; therefore, not all dolphins observed belonged to the offshore stock.

Risso's Dolphin

Risso's dolphins are large dolphins with a characteristic blunt head and light coloration, often with extensive scarring. They are widely distributed in tropical and temperate seas. In the Western North Atlantic they occur from Florida to eastern Newfoundland (Leatherwood *et al.*, 1976; Baird and Stacey, 1991). Off the Northeastern U.S. Coast, Risso's dolphins are primarily distributed along the continental shelf, but can also be found swimming in shallower waters to the mid-shelf (Hayes *et al.*, 2020).

Risso's dolphins occur along the continental shelf edge from Cape Hatteras to Georges Bank during spring, summer, and autumn. In winter, they are distributed in the Mid-Atlantic from the continental shelf edge outward (Hayes *et al.*, 2020). No Risso's dolphins were observed by Kitty Hawk Wind during previous marine site characterization surveys (Milne, 2020).

Harbor Porpoise

The harbor porpoise inhabits shallow, coastal waters, often found in bays, estuaries, and harbors. In the western Atlantic, they are found from Cape Hatteras north to Greenland. During summer (July to September), harbor porpoises are concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 m deep with a few sightings in the upper Bay of Fundy and on Georges Bank. During fall (October–December) and spring (April–June), harbor porpoises are widely dispersed from New Jersey to Maine, with lower densities farther north and south. They are seen from the coastline to deep waters (>1800 m) although the majority of the population is found over the continental shelf. During winter (January to March), intermediate densities of harbor porpoises can be found in waters off New Jersey to North Carolina, and lower densities are found in waters off New York to New Brunswick, Canada. There does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region. However, during the fall, several satellite-tagged harbor porpoises did favor the waters around the 92-m isobaths (Hayes *et al.* 2018)

In the survey area, only the Gulf of Maine/Bay of Fundy stock may be present. This stock is found in U.S. and Canadian Atlantic waters and is concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 m deep (Hayes *et al.*, 2020). They are seen from the coastline to deep waters (>1800 m; Westgate *et al.* 1998), although the majority of the population is found over the continental shelf (Hayes *et al.*, 2020). During Kitty Hawk Wind's 2019 and 2020 marine site characterization surveys, one harbor porpoise was detected during HRG surveys (Milne 2020).

The main threat to the species is interactions with fisheries, with documented take in the U.S. northeast sink gillnet, mid-Atlantic gillnet, and northeast bottom trawl fisheries and in the Canadian herring weir fisheries (Hayes *et al.* 2020).

Marine Mammal Habitat

The survey area includes the WDA, located offshore of North Carolina, and potential cable corridors extending from the WDA to Virginia waters. There are no rookeries, mating or

calving grounds known to be biologically important to marine mammals within the planned survey area at the time of survey (the Biologically Important Area (BIA) for North Atlantic right whales is for a time period outside the proposed survey time period) and there are no primary feeding areas known to be biologically important to marine mammals within the planned survey area.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 dB threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3. Marine Mammal Hearing Groups (NMFS, 2018).

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, <i>Kogia</i> , river dolphins, cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i>)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (<i>i.e.</i> , all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall <i>et al.</i> 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al.*, 2006; Kastelein *et al.*, 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Nine marine mammal species (all cetaceans) have the reasonable potential to be taken by the survey activities (Table 5). Of the cetacean species that may be present, three are classified as low-frequency cetaceans (*i.e.*, all mysticete species), 5 are classified as mid-frequency cetaceans (*i.e.*, all delphinid species), and one is classified as a high-frequency cetacean (*i.e.*, harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

This section includes a summary of the ways that Kitty Hawk Wind's specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices,

including for survey activities using the same methodology, over a similar amount of time, and occurring within the same specified geographical region (*e.g.*, 82 FR 20563, May 3, 2017; 85 FR 36537, June 17, 2020; 85 FR 37848, June 24, 2020; 85 FR 45578, July 29, 2020; 85 FR 48179, August 10, 2020; 86 FR 11239, February 24, 2021). No significant new information is available, and we refer the reader to these documents rather than repeating the details here. The **Estimated Take** section includes a quantitative analysis of the number of individuals that are expected to be taken by Kitty Hawk Wind's activity. The **Negligible Impact Analysis and Determination** section considers the potential effects of the specified activity, the **Estimated Take** section, and the **Proposed Mitigation** section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Summary on Specific Potential Effects of Acoustic Sound Sources

Underwater sound from active acoustic sources can include one or more of the following: temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.*, 2007).

Animals in the vicinity of Kitty Hawk Wind's proposed HRG survey activity are unlikely to incur even TTS due to the characteristics of the sound sources, which include relatively low source levels (176 to 205 dB re 1 μ Pa-m) and generally very short pulses and potential duration of exposure. These characteristics mean that instantaneous exposure is unlikely to cause TTS, as it is unlikely that exposure would occur close enough to the vessel for received levels to exceed

peak pressure TTS criteria, and that the cumulative duration of exposure would be insufficient to exceed cumulative sound exposure level (SEL) criteria. Even for high-frequency cetacean species (*e.g.*, harbor porpoises), which have the greatest sensitivity to potential TTS, individuals would have to make a very close approach and also remain very close to vessels operating these sources in order to receive multiple exposures at relatively high levels, as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.*, intermittent exposure results in lower levels of TTS). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range. Further, the restricted beam shape of many of HRG survey devices planned for use (Table 1) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.*, minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.*, species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.*, those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.*, snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.*, shipping, sonar, seismic exploration) in origin. Marine mammal communications would not likely be masked appreciably by the acoustic signals given the directionality of the signals for most HRG survey equipment types planned for use (Table 1) and the brief period when an individual mammal is likely to be exposed.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.*, crustaceans, cephalopods, fish, zooplankton) (*i.e.*, effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area relatively quickly, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the HRG survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

Vessel Strike

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. Ship strikes generally involve commercial shipping vessels, which are generally larger and of which there is

much more traffic in the ocean than geophysical survey vessels. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975-2003 and found that most collisions occurred in the open ocean and involved large vessels (*e.g.*, commercial shipping). For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4-5 knots. At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels, the probability of serious injury or mortality resulting from a strike is less than 50 percent. However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. Notably in the Jensen and Silber study, no strike incidents were reported for geophysical survey vessels during that time period.

The potential effects of Kitty Hawk Wind's specified survey activity are expected to be limited to Level B behavioral harassment. No permanent or temporary auditory effects, or significant impacts to marine mammal habitat, including prey, are expected.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to noise from certain HRG acoustic sources. Based primarily on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor proposed to be authorized. Consideration of the anticipated effectiveness of the mitigation measures (*i.e.*, exclusion zones and shutdown measures), discussed in detail below in the **Proposed Mitigation** section, further strengthens the conclusion that Level A harassment is not a reasonably anticipated outcome of the survey activity. As described previously, no serious injury or mortality is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the proposed take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to

varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 μ Pa (rms) for the impulsive sources (*i.e.*, sparkers) evaluated here for Kitty Hawk Wind's proposed activity.

Level A Harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). For more information, see NMFS' 2018 Technical Guidance, which may be accessed at www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.

Kitty Hawk Wind's proposed activity includes the use of impulsive (*i.e.*, sparkers) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources proposed for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Kitty Hawk Wind's application for details of a quantitative exposure analysis exercise, *i.e.*, calculated Level A harassment isopleths and estimated Level A harassment exposures. Maximum estimated Level A harassment isopleths ranged from 0 to 2 m for all sources and hearing groups with the exception of the Furgo 2D Sparker). The Level A harassment isopleth for low frequency, mid-frequency, and high frequency cetaceans was 18,

0.5, and 120.5 m, respectively and 10 m for phocids. Kitty Hawk Wind did not request authorization of take by Level A harassment, and no take by Level A harassment is proposed for authorization by NMFS.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The Fugro SPR EAH 2D sparker is the only source with the potential to result in marine mammal harassment; therefore, the 160 dB_{rms} isopleth resulting from this source is applied in ensonified area calculations. As noted previously, Kitty Hawk Wind intends to survey a total track-line distance of 3,300 km over the course of 25 days. It is estimated that the sparker will be in operation for approximately 50 percent of this duration. During the remainder of survey days, only sources not expected to have the potential to result in take of marine mammals would be used. To be conservative, the sparker has been assigned a duration of 13 days (instead of 12.5 days). The distance to the 160 dB_{rms} Level B harassment isopleth is calculated using the conservative practical spreading model and a source level of 213dB_{rms} (Table 1). The resulting isopleth is 445 m.

Kitty Hawk then considered track line coverage and isopleth distance to estimate the maximum ensonified area over a 24-hr period, also referred to as the zone of influence (ZOI). The estimated distance of the daily vessel track line was determined using the estimated average speed of the vessel (3 knots [5.6 km/hr]) over a 24-hr operational period for a total daily track line coverage of 134.4 km. The ZOI was calculated by squaring the respective maximum distance to the Level B harassment threshold (445 m) and multiplying by the estimated daily vessel track line distance of approximately 134.4 km to obtain the area of a box (118.7km²). Then the ensonified area around the vessel at any given point (0.63) was added to that area to account for ½ of a circle at each end of the box. The resulting ZOI is 119.3km² (Table 4).

The ZOI is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI was calculated per the following formula:

$$\text{ZOI} = (\text{Distance/day} \times 2r) + \pi r^2$$

Table 4. Ensonified Area During Sparker Use.

Survey Equipment	Number of Active Survey Days a/	Estimated Total Line Distance (km)	Estimated Distance per Day (km)	ZOI per Day (km ²)
Fugro SPR EAH 2D Sparker	13	1,700	133.4	119.3

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.*, 2016, 2017, 2018, 2020) represent the best available information regarding marine mammal densities in the survey area. The density data presented by Roberts *et al.* (2016, 2017, 2018, 2020) incorporates aerial and shipboard line-transect survey data from NMFS and other organizations and incorporates data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controls for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.*, 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at seamap.env.duke.edu/models/Duke-EC-GOM-2015/. Marine mammal density estimates in the survey area (animals/km²) were obtained using the most recent model results for all taxa (Roberts *et al.*, 2016, 2017, 2018, 2020). The updated models incorporate additional sighting data, including sightings from NOAA’s Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

Monthly density grids (*e.g.* rasters) for each species were overlain with the Survey Area and values from all grid cells that overlapped the Survey Area were averaged to determine monthly mean density values for each species. Monthly mean density values within the Survey Area were averaged by season (Winter [December, January, February], Spring [March, April, May], Summer [June, July, August], Fall [September, October, November]) to provide seasonal density estimates. Since the HRG surveys would only occur during summer and fall, only those values were used in the take estimation analysis. Within each survey segment (Wind Development Area and offshore export cable corridor), the highest seasonal density estimates during the duration of the proposed survey were used to estimate take.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

For most species, the proposed take amount is equal to the calculated take amount resulting from the following equation: $D \times ZOI \times 13 \text{ days}$. We note the densities provided in Table 5 represent the number of animals/100 km; therefore, the density is normalized to 1km in the equation. However, for some species, this equation does not reflect those species that can travel in large groups- an important parameter to consider that is not captured by density values. The equation also does not capture the propensity of some delphinid species to be attracted to the vessel and bowride. Therefore, to account for these real-world situations, the proposed take is a product of group size. For large groups of spotted and short beaked common dolphins knowing their affinity for bow riding (and therefore coming very close to the vessel), Kitty Hawk Wind assumed one group could be taken each day of sparker operations (13 days). Based on previous survey data, as described in previous monitoring reports, Kitty Hawk Wind assumes an average group size for spotted dolphins is 16 in the survey area. For common dolphins, the overall average reported group size was 4 in all survey areas but the average group size during the geotechnical surveys was 17 individuals. Therefore, in this case, Kitty Hawk Wind assumed a

group of 17 common dolphins could be taken on any given day of sparker operation. For Risso's dolphin and pilot whales, one group is anticipated to be taken over the 13 days of sparker operations. Average group size for these species are 25 and 20, respectively (Reeves *et al.* 2002). Take for all other species is a reflection of the calculated take. Given the timing and location of the surveys, Kitty Hawk Wind is not requesting, nor are we proposing to authorize, take of North Atlantic right whales or sei whales. Table 5 provides the amount of take proposed to be authorized in the IHA.

Table 5. Marine Mammal Density and Take Estimates.

Species	Stock	Max Avg Seasonal Density (animals/100km ²) ¹	Calculated Take	Proposed Take	Percent of Population
Humpback whale	Gulf of Maine	0.084	1.297	1	<1
Fin whale	Western North Atlantic	0.171	2.648	3	<1
Minke whale	Canadian East Coast	0.105	1.634	2	<1
Pilot whales	Western North Atlantic	0.073	1.139	20 ³	<1
Harbor porpoise	Gulf of Maine/Bay of Fundy	0.033	0.510	1	<1
Bottlenose dolphin b/	Western North Atlantic, offshore	7.913	122.725	123	<1
Common dolphin	Western North Atlantic	1.583	24.555	221 ⁴	<1
Atlantic spotted dolphin	Western North Atlantic	7.669	118.937	208 ⁴	<1
Risso's dolphin	Western North Atlantic	0.058	0.893	25 ⁴	<1

¹ Density values from Duke University (Roberts *et al.* 2016b, 2017, 2018, 2020).

² Estimates based on bottlenose dolphin stock preferred water depths (Reeves *et al.* 2002; Waring *et al.* 2016).

³ Roberts (2018) only provides density estimates for “generic” pilot whales and seals; therefore, an equal potential for takes has been assumed either for species or stocks within the larger group. The take adjusted from calculated value to account for encountering one group over the course of the 13 days of sparker use.

⁴ Take adjusted from calculated take to account for encountering one group on each of the 13 days of sparker use.

Proposed Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS proposes that the following mitigation measures be implemented during Kitty Hawk Wind's planned marine site characterization surveys.

Marine Mammal Shutdown Zones

An immediate shutdown of the Sparker would be required if a marine mammal is sighted entering or within its respective exclusion zone. The vessel operator must comply immediately

with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective exclusion zone or until an additional time period has elapsed (*i.e.*, 30 minutes for all other species). Table 6 provides the required shutdown zones.

Table 6. Shutdown Zones during sparker use.

Species	Shutdown Zone (m)
North Atlantic right whale	500
All other ESA-listed marine mammals	450
Non-ESA marine mammals ¹	50
¹ If a delphinid from specified genera is visually detected approaching the vessel (<i>i.e.</i> , to bow ride) or towed equipment, shutdown is not required.	

Pre-Clearance of the Shutdown Zones

Kitty Hawk Wind would implement a 30-minute pre-clearance period of the shutdown zones prior to the initiation of ramp-up of HRG equipment. During this period, the exclusion zone will be monitored by the PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective shutdown zone. If a marine mammal is observed within the shutdown zone during the pre-clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective shutdown zone or until an additional time period has elapsed with no further sighting (*i.e.*, 15 minutes for small odontocetes , and 30 minutes for all other species).

Shutdown Procedures

The vessel operator must comply immediately with any call for shutdown by the Lead PSO. Any disagreement between the Lead PSO and vessel operator should be discussed only after shutdown has occurred. Subsequent restart of the survey equipment can be initiated if the animal has been observed exiting its respective shutdown zone or the relevant time period has lapsed without re-detection (15 minutes for small odontocetes and seals, and 30 minutes for all other species).

The shutdown requirement would be waived for small delphinids of the following genera: *Delphinus*, *Stenella* (*frontalis* only), and *Tursiops*. Specifically, if a delphinid from the specified genera is visually detected approaching the vessel (*i.e.*, to bow ride) or towed equipment, shutdown is not required. Furthermore, if there is uncertainty regarding identification of a marine mammal species (*i.e.*, whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived), PSOs must use best professional judgement in making the decision to call for a shutdown. Additionally, shutdown is required if a delphinid detected in the exclusion zone and belongs to a genus other than those specified.

If the acoustic source is shut down for reasons other than mitigation (*e.g.*, mechanical difficulty) for less than 30 minutes, it may be activated again only if the PSOs have maintained constant observation and the shutdown zone is clear of marine mammals. If the source is turned off for more than 30 minutes, it may only be restarted after PSOs have cleared the shutdown zones for 30 minutes.

If a species for which authorization has not been granted, or, a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (445 m), shutdown would be required.

Ramp-Up

The Fugro SPR EAH 2D Sparker operates on a binary on/off switch and thus ramp-up is not technically feasible for this piece of equipment.

Vessel Strike Avoidance

Kitty Hawk Wind will ensure that vessel operators and crew maintain a vigilant watch for marine mammals and slow down or stop their vessels to avoid striking these species. All personnel responsible for navigation and marine mammal observation duties will receive site-specific training on marine mammals sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures would include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.*, PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to 1) distinguish protected species from other phenomena and 2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;

- All vessels (*e.g.*, source vessels, chase vessels, supply vessels), regardless of size, must observe a 10-knot speed restriction in the unlikely scenario a North Atlantic right whale dynamic management area (DMA) is in effect;

- All vessels must reduce their speed to 10 knots or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel underway;

- All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action;

- All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales;

- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.*, for animals that approach the vessel);

- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.*, attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation

distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained; and

- These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation of Kitty Hawk Wind's proposed measures, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the planned action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Kitty Hawk Wind would employ independent, dedicated, trained PSOs, meaning that the PSOs must 1) be employed by a third-party observer provider, 2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and 3) have successfully completed an approved PSO training course appropriate for their designated task.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including exclusion zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established exclusion zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.*, any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.*, from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) would ensure 360° visual coverage around the vessel from the most appropriate observation posts and would conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of four consecutive hours followed by a break of at least two hours between watches and may conduct a maximum of 12 hours of observation per 24-hour period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals would be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology would be used. Position data would be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.*, daylight hours; Beaufort sea state 3 or less), to the maximum extent practicable, PSOs would also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey would be relayed to the PSO team.

Data on all PSO observations would be recorded based on standard PSO collection requirements. This would include dates, times, and locations of survey operations; dates and times of observations, location and weather; details of marine mammal sightings (*e.g.*, species, numbers, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances).

Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. All draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Daly@noaa.gov*. The report must contain at minimum, the following:

- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Dates and times (Greenwich Mean Time) of survey effort and times

corresponding with PSO effort;

- Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;
- Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.*, vessel traffic, equipment malfunctions);
- Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.*, pre-clearance survey, ramp-up, shutdown, end of operations, etc.)

If a marine mammal is sighted, the following information should be recorded:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;

- Identification of the animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.*, number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach and/or closest distance from the center point of the acoustic source;
- Platform activity at time of sighting (*e.g.*, deploying, recovering, testing, data acquisition, other);
- Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

Although not anticipated, if a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Kitty Hawk Wind must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location must also be reported to the U.S. Coast Guard via channel 16.

In the event that Kitty Hawk Wind personnel discover an injured or dead marine mammal, Kitty Hawk Wind would report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS Southeast Marine Mammal Stranding Network within 24 hours. The report would include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);

- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in the activities covered by the IHA, Kitty Hawk Wind would report the incident to the NMFS OPR and the NMFS Southeast Marine Mammal Stranding Network within 24 hours. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Species identification (if known) or description of the animal(s) involved;
- Vessel's speed during and leading up to the incident;
- Vessel's course/heading and what operations were being conducted (if applicable);
- Status of all sound sources in use;
- Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;
- Environmental conditions (*e.g.*, wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
- Estimated size and length of animal that was struck;
- Description of the behavior of the marine mammal immediately preceding and following the strike;
- If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

- Estimated fate of the animal (*e.g.*, dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
- To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all the species listed in Table 5, given that NMFS expects the anticipated effects of the planned survey to be similar in nature. NMFS does not anticipate that serious injury or mortality would occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized. As discussed in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section, non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all

potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (e.g., Southall *et al.*, 2007). Even repeated Level B harassment of some small subset of an overall stock is unlikely to result in any significant realized decrease in viability for the affected individuals, and thus would not result in any adverse impact to the stock as a whole. As described previously due to the nature of the operations, Level A harassment is not expected even in the absence of mitigation. The small size of the Level A harassment zones and the required shutdown zones for certain activities further bolster this conclusion. In addition to being temporary, the maximum expected Level B harassment zone around a survey vessel is 445 m, producing expected effects of particularly low severity. Therefore, the ensounded area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the survey area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations. There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the planned survey area at the time of survey (the BIA for North Atlantic right whales is for a time period outside the proposed survey time period) and there are no primary feeding areas known to be biologically important to marine mammals within the planned survey area. In addition, there is no designated critical habitat for any ESA-listed marine mammals in the planned survey area.

NMFS expects that takes would be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures (e.g., shutdown) would further reduce exposure to sound that could result in more severe behavioral harassment. In summary, and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or serious injury is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or proposed to be authorized;
- Take is anticipated to be primarily Level B behavioral harassment consisting of brief startling reactions and/or temporary avoidance of the survey area and could occur over a very short time period (13 days);
- No areas of particular importance to marine mammals (e.g., BIA, critical habitat) occur within the survey area; and
- Impacts on marine mammal habitat and species that serve as prey species for marine mammals are expected to be minimal and the alternate areas of similar habitat value for marine mammals are readily available.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities. For this IHA, take of all species or stocks is below one third of the estimated stock abundance (in fact, take of individuals is less than 7 percent of the abundance for all affected stocks).

Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance

for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS is proposing to authorize take of fin whales, which are listed under the ESA. Therefore, we have requested initiation of Section 7 consultation with OPR's Interagency Cooperation Division for the issuance of this IHA. NMFS will conclude the ESA consultation prior to reaching a determination regarding the proposed issuance of the authorization.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Kitty Hawk Wind for conducting marine site characterization surveys off the coast of North Carolina and Virginia, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. A draft of the proposed IHA can be found at <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>.

Request for Public Comments

We request comment on our analyses, the proposed authorization, and any other aspect of this notice of proposed IHA for the proposed marine site characterization surveys. We also request at this time comment on the potential Renewal of this proposed IHA as described in the paragraph below. Please include with your comments any supporting data or literature citations to help inform decisions on the request for this IHA or a subsequent Renewal IHA.

On a case-by-case basis, NMFS may issue a one-time, one-year Renewal IHA following notice to the public providing an additional 15 days for public comments when (1) up to another year of identical or nearly identical, or nearly identical, activities as described in the **Description of Proposed Activities** section of this notice is planned or (2) the activities as described in the **Description of Proposed Activities** section of this notice would not be completed by the time the IHA expires and a Renewal would allow for completion of the activities beyond that

described in the *Dates and Duration* section of this notice, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to the needed Renewal IHA effective date (recognizing that the Renewal IHA expiration date cannot extend beyond one year from expiration of the initial IHA);
- The request for renewal must include the following:
 - (1) An explanation that the activities to be conducted under the requested Renewal IHA are identical to the activities analyzed under the initial IHA, are a subset of the activities, or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, mitigation and monitoring requirements, or take estimates (with the exception of reducing the type or amount of take); and
 - (2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

Upon review of the request for Renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures will remain the same and appropriate, and the findings in the initial IHA remain valid.

Dated: May 18, 2021.

Catherine Marzin,

*Acting Director, Office of Protected Resources,
National Marine Fisheries Service.*

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